

Conducting examinations

- *Three main aspects are considered when conducting the examination:*

1- The examination method.

2- The diagnostic criteria.

3- The indices used for measurement.

The diagnostic criteria for dental caries

According to the World health organization (WHO) 1997:

A crown is recorded as a sound tooth if it shows no evidence of treated or untreated caries

Decayed crown

Dental caries is recorded as present when a lesion in a pit or fissure or on smooth surface has a cavity, undermined enamel or detectably softened floor or wall. A tooth with a temporary filling or one which is ,Fated should be included in this category.

Decayed root

Dental caries is recorded as present when a lesion feels soft or leathery to probing with CPI probe or the root caries is discrete from the crown and will require a separate treatment it should be recorded as root caries .

Criteria for diagnosing dental caries according to :

I. Slack and Burt classification.

II. European system classification.

III. Angle Saxon system.

IV. Full range of lesion development D1-D3 Scale:

0:Sound surface: No evidence of treated or untreated clinical caries.

D1: Initial caries: No clinically detectable loss of substance. For pits and fissures, there may be significant staining, discoloration, or rough spots in the enamel that do

not catch the explorer but loss of substance cannot be positively diagnosed for smooth surface there may be white

D2: Enamel caries: Demonstratable by loss of tooth substance in pits, fissures -or on smooth surfaces but no softened floor or wall or undermined enamel.

D3: Caries of dentin: Detectably softened floor undermined enamel or a softened wall or the tooth has a temporary filling.

D4: Pulpal involvement: Deep cavity with pupal involvement. The D1-D scale is of extreme value in research studies of dental caries, for it permits identification of lesion progression as well as initiation.

Methods of measuring oral diseases:

1. Counts .

2. Proportions.

3. Rates.

4. Index.

An index is a graduated numerical scales with upper and lower limits, or a numerical value describing the relative status of the population on graduated scale with definite upper and lower limits.

Types of indices:

- 1- Reversible as gingival (GI) index
measures a reversible condition.***
- 2- Irreversible index as dental caries index
(DMF) index measures ; irreversible
condition.***
- 3- Complex as periodontal (PI) index
measures both reversible and
irreversible conditions.***

Dental indices can also be classified under special categories as:

■ **Simple index:**

Index that measures the presence or absence of condition e.g.: an index that measure the presence of dental plaque without an evaluation of its effect on the gingival.

■ **Cumulative index:**

Index that measure all evidence of a condition past and present e.g.: DMFT index for dental caries.

Requirements of an ideal index:

1- Validity .

2- Reliability .

3- Clarity .

4- Quantitability .

5- Sensitivity .

6- Acceptability .

Purposes and uses of an index for

❧ individual patient:

An index can:

- 1- Provide individual assessment to help a patient recognize an oral problem.*
- 2-Reveal the degree of effectiveness of present oral hygiene practices.*
- 3- Motivate the person in preventive and professional care for the elimination and control of oral diseases.*
- 4- Evaluate the success of individual and professional treatment over a period of time by comparing index scores.*
- 5- Provide a means for personal assessment by the dental hygienist of abilities to educate and motivate individual patients.*

❧ In research

An index is used to:

- 1- Determine base line data before experimental factors are introduced.*
- 2- Measure the effectiveness of specific agent for the prevention; control or treatment of oral conditions.*
- 3- Measure the effectiveness of mechanical devices for personal care; such as toothbrushes; interdentally cleaning devices or water irrigators.*

❧ *In community health*

An index can:

- 1- Show the prevalence and trends of incidence of a particular condition occurring within a given population.*
- 2- Provide base line data to show existing dental health practices.*
- 3- Assess the needs of a community.*
- 4- Compare the effects of a community program and evaluate the results.*

Indices used for dental caries:

DMFT index for Permanent teeth

D = Decayed permanent tooth requires restoration.

M = Missed permanent tooth due to caries only.

F = Filled permanent tooth due to caries only (permanent restoration).

T = Tooth.

DMFS indices

It is specially used in clinical trials

S = Tooth surface.

D + M + F = DMF = dental caries experience.

deft index for deciduous or primary teeth

d = decay deciduous tooth requires restoration.

e = decay deciduous tooth requires extraction.

f = filled deciduous tooth (permanent restoration).

***d + e + f = def = dental caries experience for deciduous teeth. Total mean DMFT for a group =
Sum of total DMFT of the group***

The number of subjects examined

The mean deft for a group =

Sum of total deft

Number of subjects examined

Modifications of deft index:

1. dmft index

d = decay deciduous tooth requires restoration.

m = missing deciduous tooth due to caries.

f = filled deciduous tooth (permanent restoration).

d + m + f = dmft = dental caries experience for deciduous teeth.

It is used only in the following conditions:

a- dmf index for use in children before the age of exfoliation.

b- dmf index only for deciduous teeth.

2. d f index

The missing deciduous teeth are ignored. It is recommended by the World Health Organization (WHO) for measuring the caries in deciduous teeth only.

Limitation of DMF index:

1- DMF values are not related to the number of teeth at risk. A DMF score for an individual is-'a-simple count of Those teeth in the examiner's judgment have been affected

By caries it has no dominator. A DMF score thus does nor

directly give an indication of the intensity of the attack in any one (individual).

2- The DMF index is invalid when teeth have been lost for

other reasons than the dental caries. Teeth can be lost for periodontal reasons in older adults and for orthodontic reasons in teenagers.

3- The DMF index can over estimate caries experience in teeth with the preventive restorations.

4- DMF data is of little use for estimating treatment needs.

5- DMF can not account sealed teeth .

There are two reasonable approaches or dealing with sealant in DMF index:

a- The sealed tooth is not restored in the classic sense and

b- It has required hands-on and should be considered as a filled tooth. The best way to deal with sealed teeth is to put them in a category by themselves, S for sealed .

6- The DMFS index is not used for measuring root caries.

$$\text{Care index} = \frac{\text{Filled teeth}}{D + M + F \text{ teeth}} \times 100.$$

$$\text{Restorative index} = \frac{\text{Filled teeth}}{D + F \text{ teeth}} \times 100.$$

Unmet treatment needs index=

$$\frac{\text{Mean number of decayed teeth (D)}}{\text{decayed + filled teeth}} \times 100.$$

Root caries index by Katz (RCI)

= $\frac{\text{Root surface decayed + filled surfaces}}{\text{Root surface with loss periodontal attachment}}$ x 100.

(D + F + sound teeth)

- ***Recently** the significant caries index (**SIC**) was introduced by (**D.Bratthall**).*
- *Attention is drawn to the skewed distribution of dental caries within a given population indicating that there are still large groups of individual who have considerably more caries than the **WHO** target level of 3.0 **DMFT** by the year 2000.*

The index is calculated as follows:

- ✓ *Individuals are sorted according to their **DMFT** values. The one third of the population with the highest caries score is selected and the mean **DMFT** for this group is calculated this value constitute the **SIC** index.*

*The **SIC** index can be easily calculated and used as a measure for future oral health goals.*

*The **SIC** index should be less than 3.0 **DMFT** in 12 years old children as global oral health goals by the year 2015.*

Scale of caries prevalence on WHO
map at 12 years old

Color	Level	Range of DMFT
Green	Very low caries prevalence	0.0 — 1.1
Blue	Low caries prevalence	1.2 — 2.6
Yellow	Moderate prevalence	2.7 — 4.4
Red	High caries prevalence	4.5 — 6.5
Brown	Very high caries prevalence	> 6.5

Scale of caries prevalence on WHO
map at 35 — 44 years old

Color	Level	Range of DMFT
Green	Very low caries prevalence	< 5.0
Blue	Low caries prevalence	5.0 — 8.9
Yellow	Moderate prevalence	9.0 — 13.8
Red	High caries prevalence	> 13.9